

## C L A I M S

1. A method for producing hemostasis of an artery of a patient having a puncture following arterial catheterization comprising:

introducing a hemostasis device comprising at least one electrode into the vicinity of said puncture;

supplying an electric current to said at least one electrode, thereby heating a volume of blood in the vicinity of said puncture, causing coagulation of said blood and causing closure of said puncture; and

subsequently removing said hemostasis device from the patient.

2. A method according to claim 1 and wherein said at least one electrode comprises a pair of electrodes.

3. A method according to claim 1 and wherein said introducing comprises introducing via a catheter introducer.

4. A method according to claim 1 and wherein said introducing also comprises inflating an anchor balloon attached to an end of said hemostasis device.

5. A method according to claim 1 and wherein said introducing also comprises inflating a peripheral balloon.

6. A method according to claim 5 and wherein said removing said hemostasis device comprises deflating said peripheral balloon.

7. A method according to claim 1 and wherein said introducing also comprises positioning said at least one electrode in close proximity to said volume of blood.

8. A method according to claim 1 and wherein said supplying comprises supplying electrical power at RF frequencies.

9. A method according to claim 8 and wherein said electrical power comprises electrical power in the range of 0.1 - 10 watts at up to 25 volts.
10. A method according to claim 1 and wherein said supplying also comprises adjusting said electric current based on a feedback measurement.
11. A hemostasis device comprising:  
a main shaft;  
at least one balloon; and  
at least one electrode, operable to supply an electric current and to thereby heat a volume blood adjacent to said at least one electrode and to cause coagulation of said blood and closure of the puncture.
12. A hemostasis device according to claim 11 and wherein said at least one balloon comprises:  
at least one anchor balloon, disposed at an end of said main shaft; and  
at least one peripheral balloon, disposed at a location along said main shaft exterior to a wall of said main shaft.
13. A hemostasis device according to claim 12 and wherein said volume of blood is delimited by said peripheral balloon and a wall of said artery.
14. A hemostasis device according to claim 11 and also comprising an electrical power source and control module.
15. A hemostasis device according to claim 14 and wherein said electrical power source and control module comprises:  
a power supply, operative to supply power to said at least one electrode;  
feedback measurement means; and  
a processor.

16. A hemostasis device according to claim 15 and wherein said power supply is an RF power supply.
17. A hemostasis device according to claim 16 and wherein said RF power supply is operative to supply electrical power at RF frequencies within a range of 0.1 - 10 watts at up to 25 volts.
18. A hemostasis device according to claim 15 and wherein said feedback measurement means is operative to measure at least one of electrical current, blood resistance and blood temperature.
19. A hemostasis device according to claim 15 and wherein said processor is operative to adjust said power based on an output from said feedback measurement means.
20. A hemostasis device according to claim 11 and wherein said at least one electrode comprises a pair of electrodes.
21. A method for producing hemostasis of an artery of a patient having a puncture following arterial catheterization comprising:  
introducing a hemostasis device comprising at least one electrode into the vicinity of said puncture;  
positioning said at least one electrode in proximity with said puncture;  
supplying an electric current to said at least one electrode, thereby heating a volume of blood in the vicinity of said puncture, causing coagulation of said blood and causing closure of said puncture; and  
subsequently removing said hemostasis device from the patient.
22. A method according to claim 21 and wherein said positioning comprises:  
inflating an anchor balloon attached to an end of said hemostasis device;  
inflating a peripheral balloon; and  
subsequently deflating said anchor balloon.

23. A method according to claim 22 and wherein said volume of blood is delimited by said peripheral balloon and a wall of said artery.
24. A method according to claim 21 and wherein said at least one electrode comprises a pair of electrodes.
25. A method according to claim 21 and wherein said supplying comprises supplying electrical power at RF frequencies.
26. A method according to claim 25 and wherein said electrical power comprises electrical power in the range of 0.1 - 10 watts at up to 25 volts.
27. A method according to claim 21 and wherein said supplying also comprises adjusting said electric current based on a feedback measurement.